

Claims

1. A phosphor with a garnet structure of type $A_3B_5O_{12}:D$, characterized in that part of component B is replaced by Si in a proportion x, it being possible for at least one further component K to be incorporated for charge compensation where A = rare earth and B = Al, Ga alone or in combination, and D = rare earth.
2. The phosphor as claimed in claim 1, characterized in that A = Y, Tb, Gd, La, Lu, alone or in combination.
3. The phosphor as claimed in claim 1, characterized in that D = Ce, Pr, Eu, alone or in combination.
4. The phosphor as claimed in claim 1, characterized in that $x \leq 1$.
5. The phosphor as claimed in claim 1, characterized in that the garnet has the following structure, in which the charge-compensating components KA, KB, KC may be located at lattice site A, B and/or O and m is the valence of the incorporated ions:
 $[A_{3-a}KA_a]_A[B_{5-b-x}KB_bSi_x]_B[O_{12-s}KC_s]_O:D$, in which the following relationship applies:
 $a(m_{KA}-3) + b(m_{KB}-3) + x = s(-m_{KC}-2)$.
6. The phosphor as claimed in claim 1, characterized in that one or more of the elements Mg, N or Be or Na or Li function as charge compensators KA, KB, KC.
7. The phosphor as claimed in claim 5, characterized in that the phosphor has the stoichiometry $A_3B_{5-x}Si_xKyO_{12-y}:D$, with $y \leq 2x$.
8. The phosphor as claimed in claim 1, characterized in that $x = 0.1$ to 0.5 .
9. The phosphor as claimed in claim 5, characterized

in that $KC = N$ and $x = s$.

10. The phosphor as claimed in claim 5, characterized in that the garnet has the following structure:

5 $A_3B_{5-x}Si_x[O_{12-s}N_s]_0:D$, in which in particular $s \leq 1.5$ and $x \leq 1.5$, and preferably $x = s$.

11. The phosphor as claimed in claim 5, characterized in that the garnet has the following structure:

10 $A_3[B_{5-(x+y)}Si_xKB_y]_BO_{12}:D$, in which in particular $y \leq 1$ and $x \leq 1$.

12. The phosphor as claimed in claim 5, characterized in that the garnet has the following structure:

15 $[A_{3-y}KA_y]_A[B_{5-x}Si_x]_BO_{12}:D$, in which in particular $y \leq 2$ and $x \leq 2$.

13. The phosphor as claimed in claim 5, characterized in that the garnet has the following structure:

20 $A_{3-x/3}B_{5-x}Si_xO_{12}:D$, in which in particular $x \leq 0.2$.

14. A light source comprising the phosphor as claimed in claim 1, in which the primary emission of the light source serves to excite the phosphor and a maximum of
25 the primary emission is in the range from 250 to 550 nm, and in which the primary radiation is at least partially converted into secondary radiation, in particular in order to generate white light.

30 15. The light source as claimed in claim 14, characterized in that the light source is an LED or OLED or discharge lamp.